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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/786,938	02/25/2004	Mark A. Norris	41942-05545	3783

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EXAMINER
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LIN, JACK

ART UNIT	PAPER NUMBER
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3768

DATE MAILED: 06/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/786,938

**Applicant(s)**

NORRIS, MARK A.

**Examiner**

Jack Lin

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-27, 29 and 30 is/are rejected.
- 7) ☒ Claim(s) 28 and 31 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. ____.  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>3/3/2005</u> .  | 6) <input type="checkbox"/> Other: ____.                                    |

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The information disclosure statement (IDS) submitted on March 3, 2005 is acknowledged. The references listed therein have been considered.

### ***Specification***

2. The disclosure is objected to because of the following informalities:  
  
Page 13, line 5 – “infrared pattern groups 206” appears to be incorrectly labeled and should be changed to “infrared pattern groups 204.”  
  
Appropriate correction is required.

### ***Claim Rejections - 35 USC § 101***

3. Claims 1-14 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility.

Claim 1 specifies a method to operate a signal attenuation measurement device. However, Claim 1 does not result in a physical transformation nor does it appear to provide a useful, concrete and tangible result. Specifically, it does not appear to produce a tangible result because merely demultiplexing a processed signal is nothing more than a computation within a processor. It fails to use or make available for use the result of the determination to enable its functionality and usefulness to be realized. Additionally, the asserted practical application in the specification of the method to operate a signal attenuation measurement device is for providing a

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physiological parameter that has been determined to the user. The practical application is not explicitly recited in the claims nor does it flow inherently therefrom. Therefore, Claim 1 appears non-statutory.

Claims 2-14 further limit Claim 1 but also do not specifically or inherently produce tangible results from the method steps.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-10, 12, 13, 15-27, 29 and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Hanna et al. (US Patent 6,505,133 B1). Hanna et al. teaches the use of code division multiplexing with a simultaneous signal attenuation measurement (column 2, lines 23-25). Hanna et al. also teaches that it is advantageous to further modulate the code sequences using a carrier code (column 7, line 67 – column 8, line 14) that can be periodic (column 2, line 64). In one embodiment, Hanna et al. discloses a 10 carrier pair to transmit a +1 code bit and a 01 carrier pair for a 0 code bit (column 8, lines 1-2). Hanna et al.'s disclosure is the same invention as the "frequency orthogonal code division multiplexing (FOCDM) technique" as specified by the applicant (page 8, line 9). The applicant's channel pattern groups (Figure 2, reference number 204), which are made up of pulse patterns (Figure 2), are the same as the code

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bits (column 8, lines 1-2), which are made up of carrier pairs (column 8, line 2), as disclosed by Hanna et al.

Regarding Claims 1 and 15, Hanna et al. discloses a system that includes at least two signal sources (column 2, lines 38-39), detectors (column 2, line 41), source drives to modulate the source signals based on a code (column 2, lines 47-48), and a demultiplex module (column 5, line 66). The system operates by pulsing the two light sources in accordance with a code sequence (column 4, lines 45-51), outputting a composite signal that is a multiplexed signal (column 2, lines 43-45), demultiplexing the signal (column 9, lines 15-21), and processing the signal to calculate blood oxygen saturation or related parameters (column 6, lines 8-11).

Regarding Claims 2 and 16, Hanna et al. discloses a system that can be a pulse oximeter used to measure blood oxygen saturation or related blood analyte values (column 4, lines 18-20).

Regarding Claims 3 and 20, Hanna et al. discloses an analog voltage signal that is converted to a digital voltage signal (column 5, lines 42-47) by a fast A/D converter (column 5, line 45).

Regarding Claims 4 and 21, Hanna et al. discloses the signals including a low output state and a high output state (column 6, lines 29-32) and the fast A/D converter taking multiple digital samples per cycle of each of the sources (column 5, lines 48-50).

Regarding Claims 5 and 22, Hanna et al. discloses an amplifier circuit (column 5, line 26) that can filter out selected frequency components (column 5, lines 30-32 and 39-41).

Regarding Claims 6 and 23, Hanna et al. discloses a demodulator (column 9, line 9) that carries out a demultiplexing process by processing the composite detector signal using the first

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code associated with the first source and processing the composite detector signal using the second code associated with the second source (column 9, lines 15-21).

Regarding Claims 7 and 24, Hanna et al. discloses red and infrared drive signals (Figure 4) comprising of a code bit (column 8, line 2) made up of carrier pairs (column 8, line 1), where the code bit can be made up of multiple carrier pairs (column 8, lines 17-18). The codes can be generated according to the output of a random number generator (column 7, lines 37-38).

Regarding Claims 8 and 25, Hanna et al. discloses the codes may be substantially orthogonal (column 6, lines 22-23).

Regarding Claims 9 and 26, Hanna et al. discloses the sources being pulsed between a high state and a low state (column 7, lines 57-58)

Regarding Claims 10 and 27, Hanna et al. shows the pulse patterns as being of equal length (Figure 4).

Regarding Claims 12, 13, 29 and 30, Hanna et al. shows the pulse pattern sets made up of two different pulse patterns of 10 or 01 (Figure 4).

Regarding Claims 17 and 18, Hanna et al. discloses a pulse oximeter including two or more light sources (column 4, lines 36-37) that is a red LED and an infrared LED (column 4, line 40).

Regarding Claim 19, Hanna et al. discloses a detector that receives optical signals (column 5, line 19).

***Allowable Subject Matter***

6. Claims 28 and 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter.

In regards to Claim 28, the prior art does not teach or suggest two sets of pulse patterns where their high values do not overlap in time in combination with the other limitations of claim 28.

In regards to Claim 31, the prior art does not teach or suggest a first frequency orthogonal code division multiplexed excitation waveform made up of three first pattern groups of four pulse patterns and a second frequency orthogonal code division multiplexed excitation waveform made up of two second pattern groups of six pulse patterns in combination with the other limitations of claim 31.

***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Terry (US Patent 6,650,918 B2) discloses a pulse oximeter that uses a multiplexing method comprising of at least one of frequency division multiplexing, time division multiplexing, and code division multiplexing. Ericson et al. (US Patent 6,533,733 B1) discloses an intracranial pressure monitor that may include standard pulse oximetry techniques and can simultaneously employ time-, frequency-, and code-division multiplexing.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jack Lin whose telephone number is (571) 272-7694. The examiner can normally be reached on Monday-Friday, 8:00 a.m. - 4:30 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eleni Mantis-Mercader can be reached on (571) 272-4740. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jack Lin  
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ERIC F. WINAKUR  
2/ PRIMARY EXAMINER